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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,416	09/08/2003	Naoto Tsuji	ASMJP.134AUS	9025
20995	7590	11/10/2004	EXAMINER	
KNOBBE MARTENS OLSON & BEAR LLP			VESPERMAN, WILLIAM C	
2040 MAIN STREET			ART UNIT	
FOURTEENTH FLOOR			PAPER NUMBER	
IRVINE, CA 92614			2813	

DATE MAILED: 11/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/657,416	<b>Applicant(s)</b> TSUJI ET AL.	
	<b>Examiner</b> William C. Vesperman	<b>Art Unit</b> 2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-21 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **Detailed Action**

1. This action is in response to applicant's filing of 9/8/2003.

### ***Election/Restrictions***

2. Restriction to one of the following inventions is required under 35 U.S.C. 121.

I. A method for forming an interlayer insulation film for multilayer interconnect of a semiconductor integrated circuit, comprising the steps of: forming a first insulation film on a substrate by plasma CVD using a first source gas comprising a silicon-containing hydrocarbon gas; continuously forming a second insulation film on the first insulation film at a thickness less than the first insulation film in situ by plasma CVD using a second source gas comprising a silicon-containing hydrocarbon gas and an oxidizing gas; and subjecting the second insulation film to polishing for forming a subsequent layer thereon, wherein the first insulation film has a hardness of less than 6 GPa, and the second insulation film has a hardness of no less than 6 Gpa and wherein the first source gas further "comprises an oxidizing gas" having a flow rate which is less than 1.0 times that of the silicon-containing hydrocarbon gas. Class 438, subclass +1.

See embodiments. (Claims 1 –12 are suggested.)

II. A method for forming an interlayer insulation film for multilayer interconnect of a semiconductor integrated circuit, comprising the steps of: forming a first insulation film having a hardness of less than 6 Gpa and a dielectric constant of less than 3.3 on a wiring layer of a substrate by plasma CVD using a first source gas comprising a silicon-containing hydrocarbon gas "without an oxidizing gas"; and continuously forming a

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second insulation film having a hardness of no less than 6 Gpa and a dielectric constant of no less than 3.3 on the first insulation film at a thickness less than the first insulation film formed in situ by plasma CVD using a second source gas comprising the silicon-containing hydrocarbon gas and an oxidizing gas which has a concentration greater than the silicon-containing hydrocarbon gas. Class 438, subclass +1. See embodiments. (Claims 13 –14 are suggested.)

III. An insulation film for multilayer interconnect formed in a semiconductor integrated circuit, comprising: a first insulation film formed by plasma CVD using silicon-containing hydrocarbon as a source gas, the first insulation film having a hardness of less than 6 Gpa and a dielectric constant of less than 3.3; and a second insulation film formed on the first insulation film by plasma CVD using silicon-containing hydrocarbon gas and oxidizing gas as a source gas, the second insulation film having a hardness of no less than 6 Gpa and a dielectric constant of no less than 3.3. Class 257, subclass +1. See embodiments. (Claims 15 - 21 are suggested.)

3. This application contains claims directed to the following patentably distinct species (Group I and Group II) of the claimed invention.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, no claim is generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims

readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

4. Inventions II and III are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product as claimed can be made by another and materially different process, where instead of forming the first insulation film using a plasma CVD processing step, a plasma PVD processing step could have been used in place of the claimed CVD processing step.

5. Because these inventions (Groups I, II and III) are distinct for the reasons above, restriction for examining purposes as indicated is proper.

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143)

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Vesperman whose telephone number is 571-272-1701. The examiner can normally be reached on Mon. - Fri., 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status

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information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*wcv*  
WCV

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November 5, 2004

*Carl Whitehead, Jr.*  
CARL WHITEHEAD, JR.  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800